

REMARKS/ARGUMENTS

Claim Objections

The Office rejected **claim 19** for an informality. The applicant agrees and amended the claim as suggested by the office.

35 USC §112

The Office rejected **claims 1, 9, and 16** under 35 USC §112, first paragraph, for failing to comply with the written description requirement. More specifically, the examiner noted that the term "at about feed gas pressure" would not find adequate description in the specification. The applicant respectfully disagrees, and points to page 4, last paragraph where that term is expressly defined. Nevertheless, to advance prosecution, the applicant has amended the claims to define the low feed gas pressure as a feed gas pressure of at or below 1100 psig.

The Office further rejected **claims 1, 9, and 16** under 35 USC §112, second paragraph, as being indefinite for use of the term "about". More specifically, the examiner noted that the term "about" would not have been defined in the specification. The applicant respectfully disagrees, and points to page 4, last two sentences of the last paragraph where the term is expressly defined.

35 USC §103

The Office rejected **claims 1-3, 5-7, and 16-18** as being obvious over Vijayaraghavan (U.S. Pat. No. 5,566,554) in view of Lee et al. (U.S. Pat. No. 6,354,105). The applicant respectfully disagrees, especially in view of the amendments herein.

Regarding the examiner's characterization of Vijayaraghavan's plant scheme on page 4, second paragraph, the applicant agrees. It is also noted that the examiner identifies the expander 20 of Vijayaraghavan as the second pressure reduction device and properly identifies item 36 as the demethanizer. Furthermore, the applicant agrees with the specific deficiencies in teachings in Vijayaraghavan as pointed out by the examiner spanning pages 4 and 5.

Regarding the examiner's characterization of Lee in the first full paragraph on page 5, starting on line 4, the applicant agrees with most of the examiner's statements. However, the applicant disagrees with the examiner's assertion that the demethanizer would receive "...the absorber bottoms product *as a lean reflux*..."(emphasis added). Indeed, it should be noted that the *stream 94 in Lee's Figure 4 is only used as a demethanizer reflux where that stream is directly routed and expanded to the demethanizer*. Thus, stream 94 fails to go through absorber 28a. On the other hand, where at least a portion of stream 94 is expanded and routed through the absorber, the absorber bottoms product is fed to the demethanizer as demethanizer mixed phase stream, which is clearly *entirely unsuitable for use as a reflux in the demethanizer*.

More significantly, the examiner then continued to argue that it would have been obvious to modify Vijayaraghavan's plant using the teachings of Lee to so arrive at the subject matter as presently claimed. However, *the examiner failed to provide any specific details on how such modification would be achieved without diminishing or entirely obviating Vijayaraghavan's plant operation*. It appears as though that combination is only semantically reasonable, however lack any technical basis. For example, it should be note that the reflux for the demethanizer is provided in Vijayaraghavan's plant from the vapor portion of the liquid fraction of the cooled feed gas via separator 30 first cooler 8, and JT valve 34 (which necessarily is not a lean reflux). In contrast, the entire reflux in Lee is provided by the vapor phase of a slip stream (Figure 4, stream 94 via separator 34a and stream 12) that may or may not be routed through an absorber. *Such processes are fundamentally distinct and incompatible*. Clarification is respectfully requested.

As these defects form the basis for the rejection of claims 1-3, 5-7, and 16-18, the same arguments apply to all of the claims and are not reiterated here. The applicant believes that the rejection is improper and should be withdrawn.

The Office also rejected **claim 4** as being obvious over Vijayaraghavan in view of Lee et al. as applied to claim 1 above and further view of Hoffart et al. (U.S. Pat. No. 6,295,833) and Campbell (U.S. Pat. No. 5,771,712). The applicant respectfully disagrees, especially in view of the arguments provided above. With respect to the combination of Vijayaraghavan and Lee et

al., the same arguments as noted above apply and are not reiterated here. Hoffart and Campbell fail to remedy these defects. Therefore, claim 4 should not be considered obvious over the cited art and the rejection should be withdrawn.

The Office also rejected **claim 6** as being obvious over Vijayaraghavan in view of Lee et al. as applied to claim 1 above and further view of Buck (U.S. Pat. No. 4,617,039). The applicant once more respectfully disagrees, especially in view of the arguments provided above. As already pointed out, the combination of Vijayaraghavan and Lee et al. is improper and therefore can not form a proper basis for combination with Buck such as to arrive at the subject matter as claimed in claim 6. Buck fails to remedy these defects. Therefore, claim 6 should not be considered obvious over the cited art and the rejection should be withdrawn.

The Office also rejected **claim 19** as being obvious over Vijayaraghavan in view of Lee et al. as applied to claim 16 above and in view of Campbell. The applicant again respectfully disagrees. As above, the combination of Vijayaraghavan and Lee et al. is improper and therefore can not form a proper basis for combination with Campbell such as to arrive at the subject matter as claimed in claim 19. Campbell fails to remedy these defects. Therefore, claim 19 should not be considered obvious over the cited art and the rejection should be withdrawn.

The Office also rejected **claim 20** as being obvious over Vijayaraghavan in view of Lee and Campbell et al. as applied to claim 19 above in view of Buck. The applicant once again respectfully disagrees. As above, the combination of Vijayaraghavan, Lee, and Campbell is improper and therefore can not form a proper basis for combination with Buck such as to arrive at the subject matter as claimed in claim 20. Buck fails to remedy these defects. Therefore, claim 20 should not be considered obvious over the cited art and the rejection should be withdrawn.

The Office rejected **claims 9-10, 12-13, and 15** as being obvious over Vijayaraghavan in view of Buck and Lee et al. Again, the applicant respectfully disagrees, especially in view of the arguments provided herein.

Claim 9 as amended herein expressly requires a "...*pressure reduction* device that is *configured* to expand the cooled vapor portion *to form a lean absorber reflux*...", that the "...*absorber*...is *configured to receive the lean absorber reflux*...[and to produce]... *a bottom product* that is employed as *reflux in a demethanizer*...". These elements are neither taught nor suggested in the cited art. For at least these reasons, claims **9-10, 12-13, and 15** should not be deemed obvious over Vijayaraghavan in view of Buck and Lee et al.

Moreover, the examiner appeared to assert that the primary and secondary coolers would be mere duplicative elements. However, such is not the case. As is claimed and readily apparent from the Figure in the instant application, *refrigeration content for the secondary cooler is provided by expansion of the liquid phase of the feed gas whereas refrigeration content for the primary cooler is provided by external refrigerant and absorber overhead product*. Clearly, such coolers are not duplicative.

With respect to Lee, the examiner once again only stated without any further detailed reasoning that Vijayaraghavan's plant could be modified with Lee to so arrive at the subject matter as presently claimed. Unfortunately, *it is entirely unclear to the applicant how such modification could be implemented in Vijayaraghavan*. Clarification is respectfully requested, especially with regard to (1) the reflux streams, (2) the separated liquid streams, and (3) the expansion devices and pressures of the expanded streams.

The Office also rejected **claim 11** as being obvious over Vijayaraghavan in view of Buck and Lee, and as applied to claim 9 above in view of Hoffart and Campbell. The applicant again respectfully disagrees. As pointed out above, the combination of Vijayaraghavan, Buck, and Lee is improper and therefore can not form a proper basis for combination with Hoffart and Campbell such as to arrive at the subject matter as claimed in claim 11. Moreover, Hoffart and

Campbell fail to remedy these defects. Therefore, claim 11 should not be considered obvious over the cited art and the rejection should be withdrawn.

The Office also rejected **claim 14** as being obvious over Vijayaraghavan in view of Buck and Lee, and as applied to claim 9 above in view of admitted prior art. The applicant once again respectfully disagrees. As pointed out above, the combination of Vijayaraghavan, Buck, and Lee is improper and therefore can not form a proper basis for combination with admitted prior art such as to arrive at the subject matter as claimed in claim 14. Moreover, it is unclear how the admitted prior art could remedy these defects. Therefore, claim 11 should not be considered obvious over the cited art and the rejection should be withdrawn.

Request For Allowance

Claims 1-7 and 9-20 are pending in this application. The applicant requests allowance of all pending claims.

Respectfully submitted,
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